

What is claimed is :

- 1        1. An energy passing aperture member positioned in a structure that is relatively opaque  
2              to the passage of said energy,  
3              said aperture and said structure comprising in combination:  
4              a membrane layer of crystalline material having first and second essentially parallel  
5              surfaces,  
6              said membrane layer having a first doping level,  
7              said first surface of said membrane layer being a continuous energy entrant surface,  
8              a frame member of said crystalline material,  
9              said frame member having a second doping level,  
10          said frame member forming epitaxial supporting contact with said second  
11          surface of said membrane layer surrounding an unsupported area of said second  
12          surface of said membrane layer, and,  
13          at least one opening extending through said membrane layer from said first surface to  
14          said second surface,  
15          said at least one opening being positioned in said unsupported area of said  
16          second surface of said membrane layer.
- 1        2. The energy passing aperture member of claim 1 wherein said first doping level is  
2              higher than said second doping level.
- 1        3. The energy passing aperture member of claim 1 wherein said structure is a

2       semiconductor wafer having first and second essentially parallel surfaces.

1       4. The energy passing aperture member of claim 3 wherein said first surface of said  
2       wafer is said continuous energy entrant first surface of said membrane layer.

1       5. The energy passing aperture member of claim 1 wherein said crystalline material is  
2       silicon.

1       6. The energy passing aperture member of claim 5 wherein said doping level of said  
2       membrane layer operates to stop an etch taking place with respect to said frame  
3       member.

1       7. The energy passing aperture member of claim 6 wherein the dopant in said doping  
2       level of said membrane layer is boron.

1       8. In the fabrication of an energy passing aperture structure,  
2       a process comprising :  
3              providing a quantity of crystalline material,  
4              arranging for a layer in said quantity of said crystalline material to serve with a first  
5              surface thereof as the energy entrant portion of said structure,  
6              the material of said layer having a thickness for service as a membrane,  
7              the material of said layer having a first etch responsiveness,  
8              arranging a quantity of crystalline material to serve as the support portion of said  
9              structure,

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10           said support portion quantity of said material having a second responsiveness to  
11           etching  
  
12           said support portion being shaped by etching into forming an unsupported  
13           membrane area of said layer surrounded by a continuous epitaxial  
14           contact with the remaining surface of said layer,  
  
15           using said difference between said first and said second etch responsiveness to serve  
16           as an etch stop at said layer in said shaping of said support portion , and,  
  
17           forming an opening through said unsupported membrane area.

1       9. The process of claim 8 wherein said thickness of said material for service as a  
2                  membrane is about 1 to 10 micrometers.

1        10. The process of claim 9 wherein said difference in etch responsiveness is produced by  
2            a difference in doping

1        11. The process of claim 8 wherein in said step of providing a quantity of crystalline  
2        material, said quantity is in wafer form.

12 The process of claim 11 wherein said crystalline material is silicon

1       13. The process of claim 12 wherein said membrane layer is doped with boron to  
2        $7 \times 10^{19}$  atoms / cm<sup>3</sup>

1        14. The process of claim 13 wherein said difference in etch responsiveness is produced by  
2              a difference in doping.

1        15. The process of claim 14 wherein said difference in etch responsiveness is produced by  
2              a difference in doping wherein said membrane layer is doped to  $10^{19}$  atoms /  $\text{Cm}^{-3}$   
3              and said support portion is doped to about  $10^{16}$  atoms/  $\text{Cm}^{-3}$ .